Claims

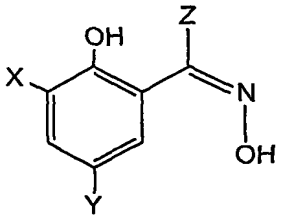
1. A process for the preparation of a polymer comprising the step of performing a ring-opening polymerisation reaction of at least one lactone, lactam, cyclic ether, cyclic carbonate, cyclic carbamate, lactide, or other cyclic compound which is susceptible to ring-opening polymerisation, in the presence of a catalyst which comprises the reaction product of

(i) an alkoxide, halide, condensed alkoxide, amide, condensed amide, mixed halo-alkoxide or, mixed halo-amide, sulphonic acid derivative, sulphonamide, silanol or silylamide of titanium zirconium, hafnium or aluminium or a mixture thereof,

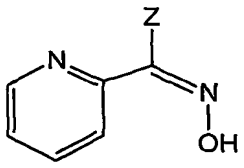
and

(ii) a complexing compound selected from the list comprising oximes, hydroxy-Schiff bases, 8-hydroxyquinoline derivatives, 10-hydroxybenzo-[h]-quinoline derivatives, hydrazones and substituted phenols.

2. A process as claimed in claim 1, wherein the complexing compound is an aryl-substituted (including polycyclic aryl-) (aromatic or heterocyclic) oxime of Formula 1 or Formula 2,



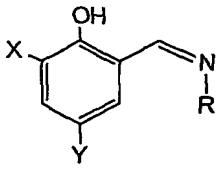
Formula 1



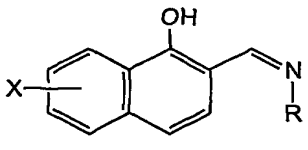
Formula 2

in which X and Y, which may be the same or different, are selected from H, alkyl (preferably C_1 – C_6 alkyl, e.g. t-butyl), alkoxy, NO_2, halogen, amino (including alkylamino) and Z is selected from H, or an alkyl aryl or pyridyl group, any of which may be substituted or unsubstituted.

3. A process as claimed in claim 1 , wherein the complexing compound is a hydroxy-Schiff base of general Formula 3 or 3a,



Formula 3

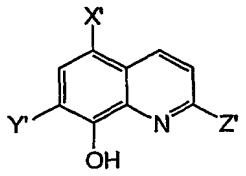


Formula 3a

where X and Y are selected from H, alkyl (preferably$C_1 - C_6$ alkyl, e.g. t-butyl), alkoxy, NO_2, halogen, amino (including alkylamino) and R is substituted or unsubstituted alkyl, including cycloalkyl, aryl, aryloxy, alkoxy, or a polycylic group such as quinolyl.

4. A process as claimed in claim 3 wherein the hydroxy Schiff base is a dimeric or trimeric Schiff base, in which R in Formula 3 or 3a comprises a linking group which is linked to a second or third Schiff base moiety and said linking group contains between 1 and 6 atoms which comprise one or more of C, N and O.

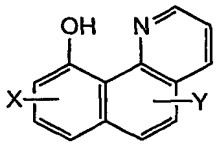
5. A process as claimed in claim 1 , wherein the complexing compound is a 8-hydroxyquinoline derivativeof the general formula 4:



Formula 4

where X' and Y' are, independently H, halogen, NO_2, alkyl or alkenyl and Z' is alkyl.

6. A process as claimed in claim 1 , wherein the complexing compound is a 10-hydroxybenzo-[h]-quinoline derivative of the general formula 5.



Formula 5

7. A process as claimed in claim 1 , wherein the complexing compound is an aromatic hydrazone, which may be unsubstituted or substituted at either the aromatic ring or the N atom.

8. A process as claimed in claim 1 , wherein the complexing compound is a substituted phenol having a substituent which includes a N-, O- or S- containing group which can coordinate to a metal atom.

9. A catalyst for the ring opening polymerisation of a lactone, lactam, cyclic ether, cyclic carbonate, cyclic carbamate, lactide, or other cyclic compound which is susceptible to ring-opening polymerisation comprising the reaction product of

(i) an alkoxide, halide, condensed alkoxide, amide, condensed amide, mixed halo-alkoxide or, mixed halo-amide, sulphonic acid derivative, sulphonamide, silanol or silylamide of titanium zirconium, hafnium or aluminium or a mixture thereof,

and

(ii) a complexing compound selected from the list comprising oximes, hydroxy-Schiff bases, 8-hydroxyquinoline derivatives, 10-hydroxybenzo-[h]-quinoline derivatives, hydrazones and substituted phenols.

10. A polymerisable mixture comprising at least one lactone, lactam, cyclic ether, cyclic carbonate, cyclic carbamate, lactide, or other cyclic compound which is susceptible to ring-opening polymerisation, and a catalyst comprising comprising the reaction product of

(i) an alkoxide, halide, condensed alkoxide, amide, condensed amide, mixed halo-alkoxide or, mixed halo-amide, sulphonic acid derivative, sulphonamide, silanol or silylamide of titanium zirconium, hafnium or aluminium or a mixture thereof,

and

(ii) a complexing compound selected from the list comprising oximes, hydroxy-Schiff bases, 8-hydroxyquinoline derivatives, 10-hydroxybenzo-[h]-quinoline derivatives, hydrazones and substituted phenols.